CADD News

How to get CADD Training

CADD Services has officially migrated administration of all CADD Training over to the NC Learning Center, also known as the LMS. The NC Learning Center is managed by Office of State Personnel and they have mandated use of the system for almost all Training. As such, NC Learning Center will now handle requesting, approving, scheduling, and tracking of all CADD Training.

The NC Learning Center can be accessed by a new Learning tab on Beacon. Click here for a 5 minute overview video of CADD training in the new LMS! A few important points from the video are noted below:

1) Two levels of training approval – All training requires Manager approval and Unit Training Coordinator approval. These approvals must take place in the LMS before a seat is reserved in training

2) First Come, First Serve – There is no longer a priority list managed for CADD Training. All training is first come, first served. If spots are filling up in a certain session (class), it is important that manager approval and training coordinator approval occur in a timely manner to have the best chance of getting into a desired session.

3) Session Full? - If a session is full or if you can not make a scheduled session, you can place your name on an interest tracking list which will be monitored by CADD Services to determine needs for future sessions. When future sessions are created, the individuals on the interest tracking list will be notified by the LMS. However, they are not guaranteed a session spot and still must go through the session request/approval process in order to secure a seat in the newly scheduled session.

If you have any questions regarding CADD Training in the new LMS, please contact Steve Brown at 919-707-7032 or email spbrown1@ncdot.gov

CADD News is Back

It has been a while since the last issue of the CADD News has hit the stands (inbox). Sorry about that, I have been busy with the general day to day activities that we all deal with, and the CADD News got pushed aside. Will try to do better in 2016 so stay tuned.

Putting together a newsletter, like a website, can be both a fun and frustrating endeavor. It is fun the first few times, but the more one does it, the harder it becomes to create new articles for each edition.

After a while, one keeps putting off next edition due to lack of content. Unfortunately, this becomes a self-full filling prophecy.

Enough about why there haven't been more issues this year. This issue is eleven pages long making the largest one I have put together over the past fifteen years. Topics range from getting more out of the North Carolina Learning management system to using GE-OPAK templates for 2D design.

Hope you find this issue informative and helpful. If there are any specific topics that you would like to see addressed in the CADD News. Please feel free to drop me an email at rjrobinson@ncdot.gov and let me know.

If you would like to contribute an article or story to the CADD News, please don't hesitate to send it to me at the same email address.

As Bugs Bunny is fond of saying "That's all folks". See you next issue.
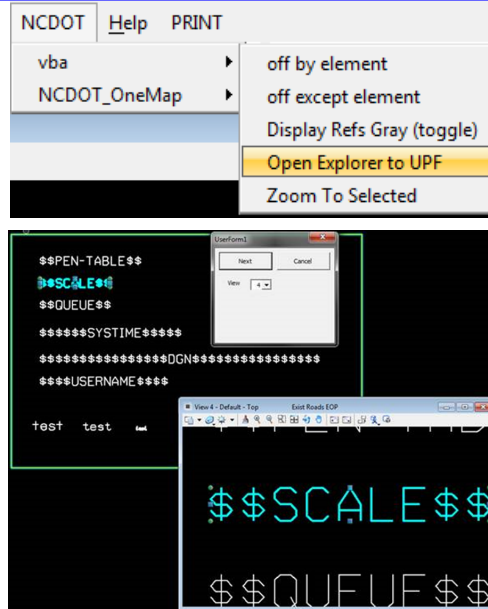
- the editor

New MVBAs

Two new mvba files have been added to the NCDOT stds folder. Both are accessed from the

NCDOT->VBA menu drop down.

- Open Explorer to UPF opens windows explorer to the folder containing the open MicroStation's UPF folder.

- Zoom to Selected opens a MicroStation View Window and sequentially zooms in on the pre-selected elements.

Concerning The Update Workspace Program

There are three occasions where a user will have to install the update Workspace Program on a CADD Machine.

1. If you receive a NEW CADD PC.
2. If your current CADD PC is re-imaged
3. You logon to another existing CADD PC for the first time as a different user.

To install the Update Workspace Program simply select the Install UpdateWS Program shortcut found in the CADD Tools shortcut directory.

FYI - Roadway design is no longer supporting the NCwedge mdl app and Criteria Shape files. If you do have an ongoing project that you have used these tools on and run into problems Roadway Design will do their best to solve your problems.

MicroStation two letter Key-Ins

While you can use a dialog box or a pull down menu for most things in MicroStation, it can be quicker and easier in most cases to use the old fashion key-in method. In the key-in window simple key–in the correct 2 letter command and hit the enter key. For example to create a cell key in *cc=cellname, description* and hit Enter. See which of the following key-ins you can take advantage of.

Set the active angle
AA=<angle>

Activate and place a cell absolute
AC=<cell name>

Attach a menu
AM=<menu name, type>

Set active pattern cell
AP=<pattern cell>

Activate and place a cell relative
AR=<cell name>

Set Active scale
AS=<scale>

Set active depth relative to the view
AZ=<depth>

Create cell in current Lib.
CC=<cell name, desc.>

Delete cell from current Lib.
CD=<cell name>

Setup cell matrix for placement
CM=<rows,columns,row space, column space>

Set active color
CO=<color number>

Rename cell in Lib.
CR=<old name, new name>

Attach a color table
CT=<color table name>

Display depth / relative to clipping plane
DD=<front,back>

Precision input /distance and direction
Di=<distance, direction>

Precision input/ delta distance & direction
DL=<Dx,Dy,Dz>

Display depth relative to Z axis
DP=<front,back>

Display text file
Dr=<filename>

Delete a saved View
DV=<view name>

Precision Input / delta on view axis
DX=<Dx,Dy,Dz>

Set Active depth /relative to Z axis
DZ=<distance>

Save Fence contents to a file
FF=<file name>

Set Active font
FT=<font number>

Set Global origin/ 0,0 set it to lower-left
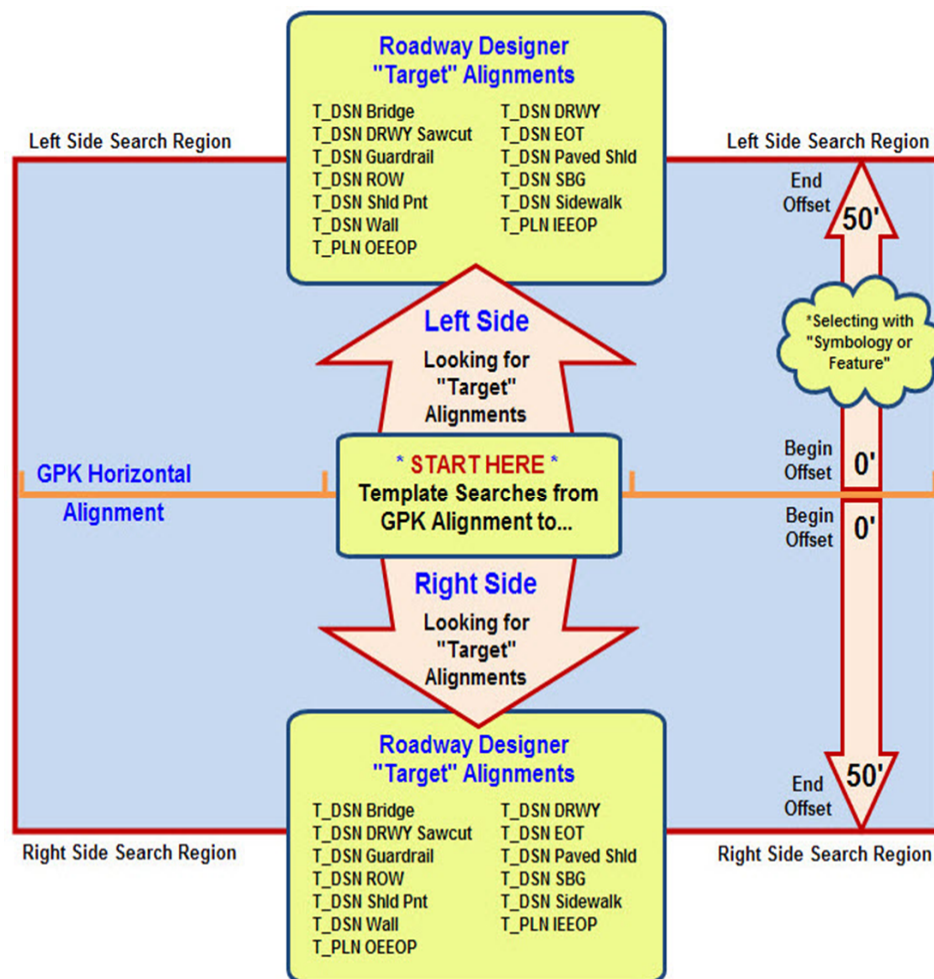**Go=<x,y,z>**

Set active Grid Reference
GR=<distance>

Trouble remembering where the upf is located?

You can open the MicroStation menu item Workspace -> About Workspace. In the middle of the dialog it will show the path to the file (hover over it to see the full path).

How Templates Read Plan Graphic Alignments

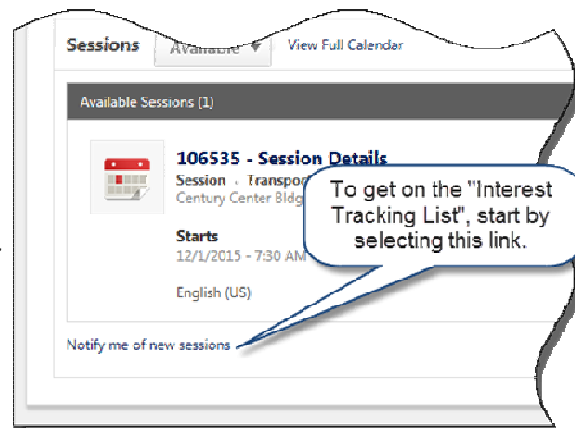| Target Type	Microstation Level Name	Roadway Designer "Target" Alignments
Bridge	Prop Roadway Bridge	T_DSN Bridge
Driveway	Prop Conc Driveway	T_DSN DRWY
Driveway Sawcut	*User Defined*	T_DSN DRWY Sawcut
Edge of Travel	Prop EOT	T_DSN EOT
Guardrail	Prop Guardrail	T_DSN Guardrail
Paved Shoulder	Prop Paved Shoulder	T_DSN Paved Shld
Right of Way	Prop ROW RW Lines	T_DSN ROW
Shoulder Berm Gutter	Prop SBG	T_DSN SBG
Shoulder Point	*User Defined (Scratch Level)*	T_DSN Shld Pnt
Sidewalk	Prop Conc 4in Sidewalk	T_DSN Sidewalk
Wall	Prop Noise Wall	T_DSN Wall
Exist (Inside) Edge of Pavement	Exist Roads EOP	T_PLN IEEOP
Exist (Outside) Edge of Pavement	Exist Roads EOP	T_PLN OEEOP

Training Advice for the LMS - Use the Interest Tracking List

Let's say you've found an event in the LMS that interests you, and you want to be notified whenever the instructor schedules a session. Within the LMS, you can add your name to an "Interest Tracking List" for that event. Then, whenever the instructor schedules a session, the LMS will send you an automated announcement email. Caution: the LMS will not automatically sign you up for the session. After receiving your email, you must still log into the LMS and request the session.
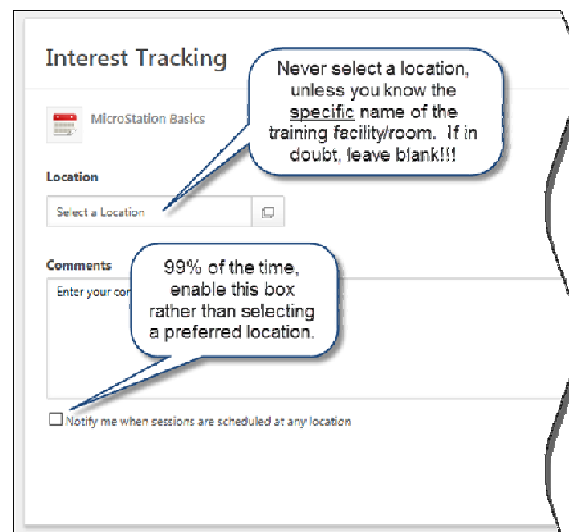
Why use the list? Two reasons; first you don't have to keep logging into the LMS to see if a session has been scheduled. Second, CADD Services uses the length of the list to judge demand. We usually wait until a critical number of employees have put their name on the list to schedule a session. By adding your name, you increase the probability that we will schedule a session soon.

How to get your name on the list:
Log into the LMS and browse to the event that interests you. If the instructor permits Interest Tracking for the event, somewhere on the event's description page you will find a link that starts with "Notify me ". Select the link to start the process of getting on the list. The included images use MicroStation Basics as an example.

On the **Interest Tracking** screen, our advice is to never select a preferred training location. This feature is broken, and requires too many words to explain why. Instead of selecting a location, enable the checkbox at the bottom of the screen. This way, you will be notified no matter where a session is scheduled. You may get notifications that don't interest you, but you can ignore them.

Comments Field: If you are interested in a CADD Services event, there is little reason for prospective students to enter comments. If you are a supervisor, training coordinator, or CADD Coordinator, a comment is warranted, please. Note something like "I am a supervisor who wants to keep apprised of available sessions for my employees".

How do you get off the list? The LMS will not permit you to remove your name. Instead, email anyone in CADD Services and ask that your name be removed. The LMS automatically removes a name if that employee has missed 6 training opportunities or the name has been on the list for a year, whichever occurs first.

Questions: Call Steve Brown in CADD Services (919-707-7032). You can also email Steve at spbrown1@ncdot.gov.

Set grid point distance horizontal
GU=<distance>

Set Keypoint divisor
KY=<number>

Set active linestyle
LC=<level number>

Set active dimension level
LD=<level number>

Maximum text line length
LL=<number of char.>

Text Line Spacing
LS=<distance>

Set active line terminator
LT=<cell name>

Set Active level
LV=<level>

Turn off level(s)
OF=<level(s)>,data pt. view

Turn on level(s)
ON=<level(s)>,data pt. view

Set point cell element
PT=<cell name>

Attach a cell library
RC=<library name>

Open another design file
RD=<file name>

Rotate view by angle
RV=<angle>data pt. view

Separate fence constents to new file
SF=<design file>

Set spaces in tab
TB=<number of spaces>

Set Text Height
TH=<text height distance>

Set text height and width
TX=<text size>

User commands
UC=<uc name>

Workspace Concepts

A *MicroStation* workspace is a collection of files and folders organized under a parent folder. The files control customization of *MicroStation* for an organization's users. Some of the files control the application interface and environment. Other files define levels, cells, text styles, dimension styles, and custom tools and toolboxes. Other files play a role in plotting. When a user opens a design file using a particular workspace, he is said to be opening his file "in" that workspace.

When an organization purchases *MicroStation*, the software can be set up on the organization's machines so that when a user launches a design file, the organization's workspace files silently run to customize the interface for the organization's user. For example, among other events, toolboxes and tools specific to the organization are loaded. Access is provided to the organization's level libraries, cell libraries, filter libraries, and style libraries.

Often several workspaces load when a design file is opened. An organization's setup of *MicroStation* determines which workspaces load and in what order. When multiple workspaces are loaded, the user gets access to multiple features from these various workspaces.

With respect to NC DOT, CADD Services has set up two workspaces that load when a user properly launches a design file. These workspaces are listed below. The user will find these workspace folders on the C drive of his computer.

Parent Folder Path and Name	Workspace Referred to As
C:\NCDOT_V8_CONFIG	Config workspace
C:\NCDOT_V8_WORKSPACE\NCDOT_STDS	NCDOT workspace

Additionally, many Units such as Roadway, Photogrammetry, and Hydraulics, have set up their own workspaces. When an employee of such a Unit properly launches a design file, their Unit's workspace loads along with the two previously mentioned workspaces. As an example, when a Roadway user launches a file in the Roadway workspace, three workspaces load: Config, NCDOT, and Roadway. Several examples of Unit workspaces are listed below. Where appropriate, these workspace folders are also on the user's C drive. (Most users only need one Unit workspace, as explained shortly.)

Parent Folder Path and Name	Workspace Name
C:\NCDOT_V8_WORKSPACE\ROADWAY_STDS	Roadway workspace
C:\NCDOT_V8_WORKSPACE\HYDRAULICS_STDS	Hydraulics workspace
C:\NCDOT_V8_WORKSPACE\GEOTECHNICAL_STDS	Geotechnical workspace
C:\NCDOT_V8_WORKSPACE\LOCATION_STDS	Location workspace

Needed Workspaces

NC DOT employees who use CADD machines will find the workspaces on their C drives, with paths as noted above. Although over twenty workspaces are available to users, most users need at most three. All users need the two workspaces maintained by CADD Services: the config and NCDOT workspaces.
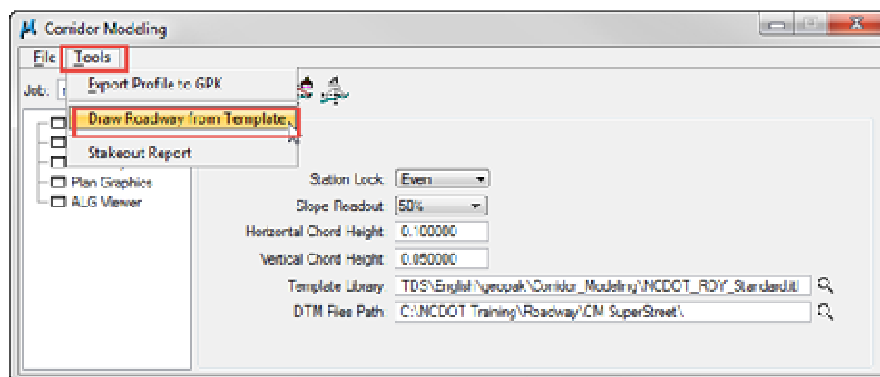
From the emails of Oak Thammavong

Draw Roadway From Template Feature

Most people think that Corridor Modeler is a 3D design tool that you use after you have laid out all you planametrics. But did you know that you can also use it to do your initial 2D layout work? The following is from an August e-mail.

Please find a new specialize type of templates in our standard library under the folder called *2D Plans Templates*.

These five templates represent the most common roadway types. The main perk to these templates is the ability to generate your plan view elements, such as the centerline, edge of travel, paved shoulder, etc. commonly found in our DSN file, fairly quickly and easily. They can serve as a base for early in functional design stage for comparing different roadway configurations to starting out preliminary design work. The best part is you do not have to go into Roadway Designer. This tool is available in the Corridor Modeling dialog box under **Tools** à **Draw Roadway from Template**.

All that is required is you horizontal alignments have been previously imported into the Geometry (GPK à ALG).

CADD IMAGES AND SUPPORTED MACHINES

Standard Supported CADD Models (vintage order)

Desktops
HP 6005pmt (1st purchase serial numbers start with 2UA14   .)
HP 6005pmt (2nd purchase serial numbers start with 2UA22   .)
HP 6305pmt (1st purchase serial numbers start with 2UA31   .)
HP 6305pmt (2nd purchase serial numbers start with 2UA42   .)

Laptops
HP 6460b
HP 6560b
HP 6470b
HP 640
Lenovo L440

Note:
CADD Services will shortly begin replacing HP 6005pmt (1st purchase serial numbers start with 2UA14   .) with a DELL OP3020 PCs.

Workspace Concepts from Page 4

Then, if you work in a Unit such as Photogrammetry, Roadway Design, or Hydraulics, you need that Unit's workspace. If you are in the various Division and District offices performing "cross" Unit drafting, then you need all of those Units' workspaces.
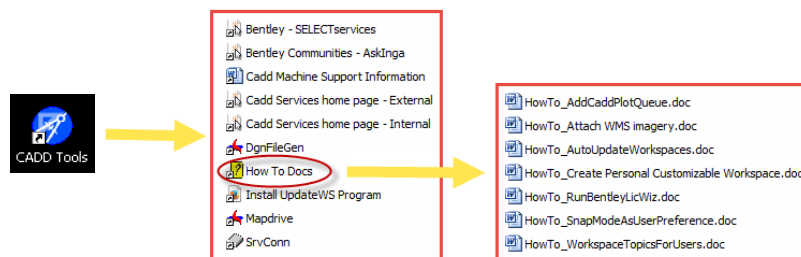
You do not need a Unit's workspace to simply open design files from that Unit or to reference that Unit's design files into your files.
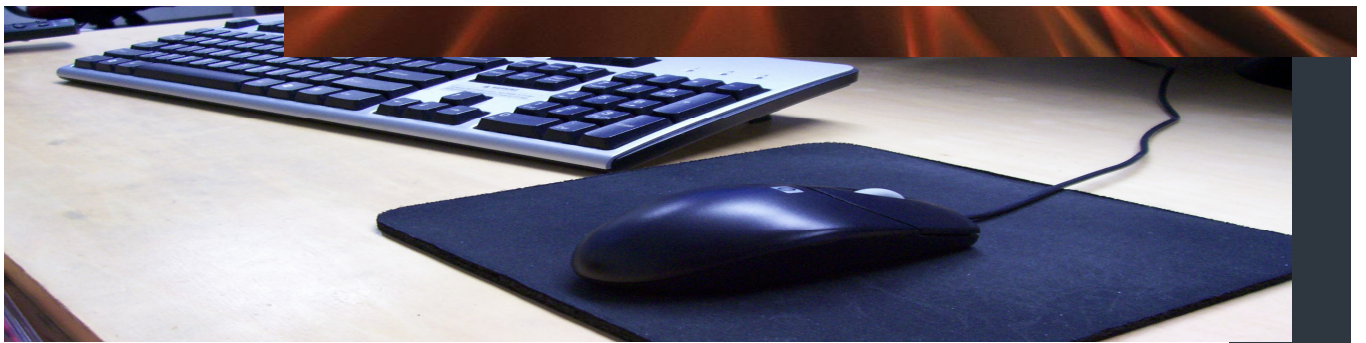
Consult with your CADD Coordinator or with CADD Services if you are uncertain of the workspaces you need on your C drive.

This article was taken from a "How To: Workspace Topics for Users" written by Steve Brown of CADD Services. The rest of the article along with other similar ones can be found on any CADD Workstation in the following directory :
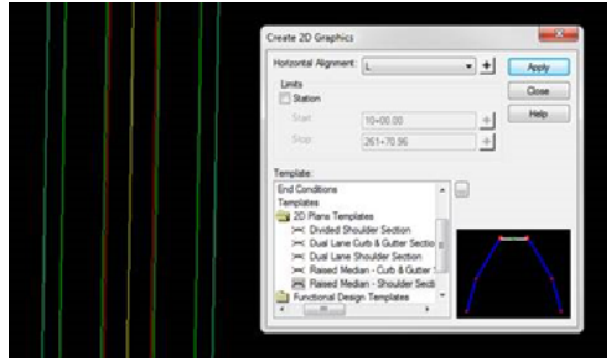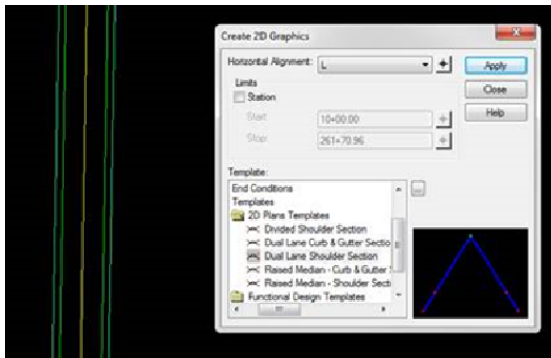
C:\NCDOT_V8_WORKSPACE\Ncdot_Stds\Standards\help\How To

*or by simply clicking on the **CADD Tools icon** and selecting the How to Docs shortcut*
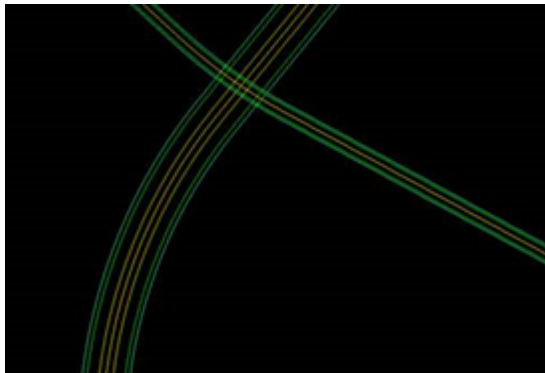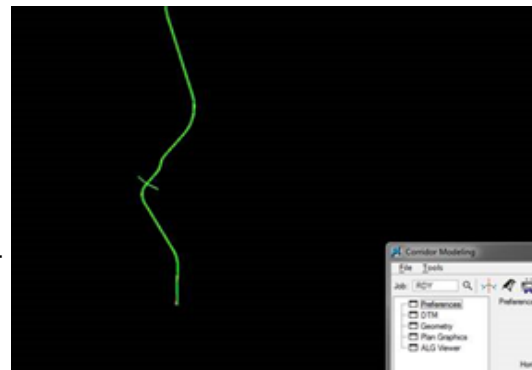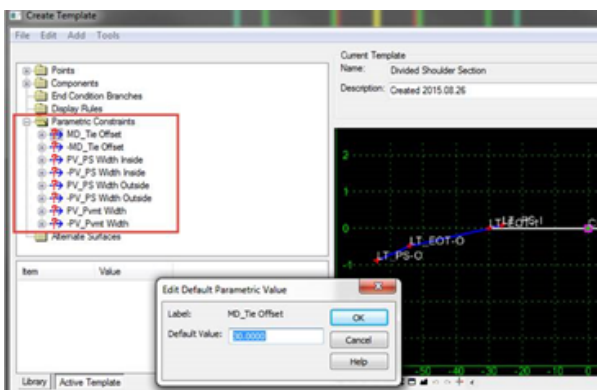
Draw Roadway continued form Page 5

You still have to do the manual intersection ties and lane tapers.

If over 75% of the work in the DSN file is already done, why would anyone even consider not using this as a starting point? And by fast I mean generating a five mile long mainline corridor under two seconds!!!

These new specialize templates come with your usual standard set of parametric constraints, so you can tailor them to your specific project needs

Bear in mind the yellow centerline is there initially for reference. Once you are ready to finalize the HAL, delete it and use the regular D&C Manager for layout and labeling stations and tick marks.

Some COGO Naming Conventions

- COGO point numbers increase in the same direction as the project main line (-L-) direction.
- COGO point number can be once per chain. The same point number can not be shared different chains.

NCDOT Unit	Beg Pt.	to	End Pt.
LocationSurveys	1	to	5,000
Construction	5,001	to	10,000
Photogrammetry	10,001	to	15,000
Roadway Design	15,001	to	20,000
Hydraulics	20,001	to	25,000
Structures	25,001	to	30,000
Geotechnical	30,001	to	35,000
Design Services	35,001	to	40,000
Traffic Engineering	40,001	to	45,000
Roadside Environmental	45,001	to	50,000

- COGO point number range are assign to each NCDOT Unit. Therefore the following number ranges are to be used:

- As an option, COGO point numbers can be preceded with chain names as a prefix. Examples;

```
****  P O I N T S    U S E D  ****

L15001, L15002, L15003, L15004, L15005, L15006, LPA15460, LPA15461, LPD15490,
LPD15491, RPA15450, RPA15451, RPA15452, RPA15453, RPA15454, RPA15455,
RPA16650, RPA16651, RPA16652, RPA16653, RPA16654, RPA16655, RPD15480,
RPD15481, RPD15482, RPD15483, RPD15484, RPD15485, RPD16680, RPD16681,
RPD16682, RPD16683, RPD16684, RPD16685, Y415400, Y415401, Y615600, Y615601,
Y615602, Y615603, Y915900, Y915901, Y1116100, Y1116101, Y1116102, Y1616600,
Y1616601, Y1616602, Y1616603, Y1616604
```

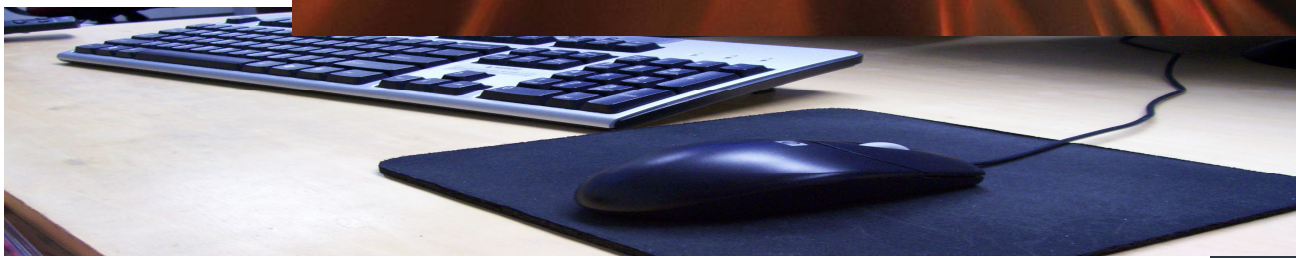- Group COGO points according in relationship to their respective chain.

-L-	-Y8-	-RPA-
L15001	Y818500	RPA18740
L15002	Y818501	RPA18741
L15003	Y818502	RPA18742

- COGO line name starts with Chain name followed by a number in successive order. COGO line elements are rarely used in Roadway. Example:
  L1 | **L**2 | **L**3
- COGO curve name starts with Chain name followed by a number in successive order.

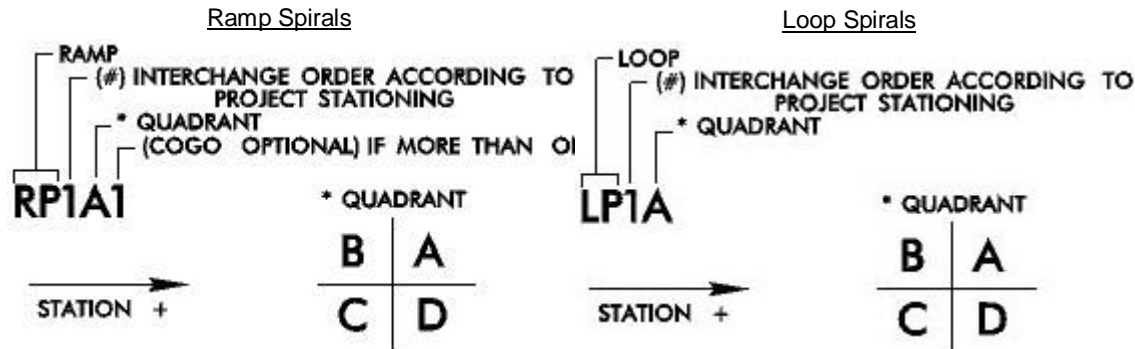| -L-	-Y8-	-RPA-
L1	Y81	RPA1
L2	Y82	RPA2
L3	Y83	RPA3

- COGO spiral name starts with Chain name followed by a number in successive order. On complex interchange projects which have more than one interchange, a system of spirals and loops naming convention is needed to organize how ramps and loops are designated in COGO and in plans production. It is recommended that the following spiral and loop names

COGO from Page 9

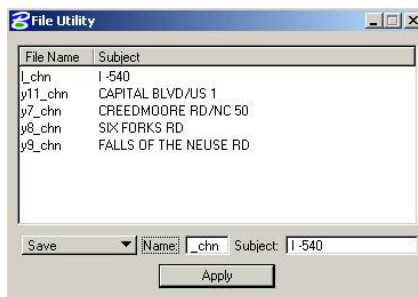format be followed to insure some COGO and plans consistency.

<u>Ramp Spirals</u>   <u>Loop Spirals</u>

RAMP
(#) INTERCHANGE ORDER ACCORDING TO PROJECT STATIONING
* QUADRANT
(COGO OPTIONAL) IF MORE THAN O[...]

RP1A1

LOOP
(#) INTERCHANGE ORDER ACCORDING TO PROJECT STATIONING
* QUADRANT

LP1A

* QUADRANT

B	A
C	D

STATION +

* QUADRANT

B	A
C	D

STATION +

Spiral Name	Automatic SCS Designation
Example: L[...]	SPI L1B - CUR L1 - SPI L1B
LP3C	SPI LP3CB - CUR LP3C - SPI LP3CA
RP2A1	SPI RP2A1B - CUR RP2A1 - SPI RP2A1A

SPI L1B   CUR L1   SPI L1A

STATION +

NOTE:
Geopak will assigned the letters "A" and "B" to the end of spiral names. Letter "A" designates that the spiral is the ahead spiral and letter "B" designates that the spiral is the back spiral stored in a SCS (Spiral-Curve-Spiral) series.

- COGO chain are stored in the GPK file as alignment name labeled on the plans. COGO chain input file are saved as *[[chain name]_chn]RDY.i[operator code]. Example: L_chnRDY.iot | Y8_chnRDY.iot | RP1A_chnRDY.iot

- COGO chains output file are saved as *[TIP]_chain.o[operator code]. Example: R2006_chain.oot

- It is recommended that on big projects, COGO chain input files have the description of the chain in the Subject field for ease of locating alignments on the plans. For Example:

File Utility

File Name	Subject
l_chn	I-540
y11_chn	CAPITAL BLVD/US 1
y7_chn	CREEDMOORE RD/NC 50
y8_chn	SIX FORKS RD
y9_chn	FALLS OF THE NEUSE RD

Save   Name: l_chn   Subject: I-540

Apply

NOTE:
- Maximum file name length saved is limited to five (5) characters in the Geopak File Utilities Dialog Box.
- Maximum file name length displayed is limited to eight (8) characters in the Geopak File Utilities Dialog Box
- Maximum file name length saved (and resave) is limited to 64 characters in the Geopak COGO key-in field.

2 TACOMA NARROWS BRIDGE

Tacoma Narrows

Opened in MAY 1940

$6 MILLION building cost

Link between communities, merchants and military operations during WWII

3RD LARGEST SUSPENSION BRIDGE

Earned the nickname **"GALLOPING GERTIE"** due to the way it bounced or galloped under stress from strong winds

FAILURE

November 7, 1940

10 AM   THE BRIDGE BEGAN TO "GALLOP"
It twisted up to 28 ft. on one side and reached angles up to 45 degrees on the other side, all while moving up and down

11 AM   THE BRIDGE BROKE APART
A 600-ft.-long center section broke off, snapped from its cables, flipped over and fell into Puget Sound

All suspension bridge design of the time considered wind as only a minor factor, so many others experienced similar movements to Galloping Gertie

INFLUENCE

A NEW NARROW BRIDGE TOOK ITS PLACE: "STURDY GERTIE"
Redesigned, heavier, stronger and wider, the bridge was completed in October 1950 and still stands today

TODAY, DESIGNS OF ALL MAJOR SUSPENSION BRIDGES

TAKE INTO ACCOUNT aerodynamic effects

UTILIZE wind tunnel studies

CALCULATE stresses from the wind load

Last Word
Signs You've been the victim of a data breach

- The waiter ask how you could consider that dessert with your medical history.

- People greet you by your social security number.

- The doctor's office says to come in 15 minutes later because it would be useless to sign any privacy forms.

- Strangers tell you how much better they feel about themselves since they've learned about you.

- A coworker tells you you're not as bad as you personnel file suggests.

- Your children come home crying because the other kids are picking on them about your credit card balances.

- The person on the elliptical next to you says you're pretty relaxed for someone with a mortgage as large as yours.

From The BackStory at FCW.com